ABSTRACT OF THE DISCLOSURE

The Domain-based Congestion Management method and apparatus detects and regulates congestion in a Diff-serv network. It uses an improvRED method for congestion detection at the core routers and token bucket filters for traffic regulation at the ingress nodes. In addition, improvRED also provides feedback control.

ImprovRED uses three thresholds for detecting congestion: a minth, a maxth and a FeedbackThreshold, which takes a value between the minth and the maxth thresholds. Whenever the average queue size is greater than minth and less than Feedback-Threshold, all outgoing packets are marked appropriately to indicate a potential onset of a congestion period. When the average queue size is greater than FeedbackThreshold (but less than maxth) packets are dropped probabilistically and all the outgoing packets are marked appropriately to denote the dropping phase. When the average queue size is greater than the maximum threshold, all incoming packets are dropped.

Feedback, in the form of a Local Congestion Notification (LCN) message, is used to notify the ingress nodes of a likely onset of congestion. Ingress nodes immediately respond to the congestion notification by appropriately regulating their respective traffic rates (i.e., the amount of packets they inject into the Diff-serv network). The amount of traffic (or data packets) injected into the core of the Diff-serv domain is controlled by a token bucket filter at each of the ingress nodes.